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Patterned nanoring magnetic tunnel junctions and current-induced magnetization switching Z.C. WEN, H.X. WEI, Y.N. HAN, X.F. HAN, Institute of Physics, CAS — Patterned nanoring (NR) magnetic-tunnel-junctions (MTJs) with outer diameters between 100 and 400nm and narrow ring widths between 25 and 30nm were successfully fabricated. The NR structure consists of CoFeB electrodes and Al-oxide barrier. The tunnelling magnetoresistance (TMR) ratio of the patterned NR-MTJs is in the range of 20%-50% observed at room temperature with RA lower than $50\Omega\mu\text{m}^2$. These NR- MTJs allow current-induced magnetization switching with a low switching current density of around $9 \times 10^6 A/cm^2$. Due to the small stray field and high TMR ratio, NR-MTJs offer superior prospects for very high density magnetic random access memory (MRAM), recording medium and other spintronics devices.

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